Top-View Bird Beak Drawing: Bill Shape and Nostril Placement

Original tasks 1, 2 / complete keys

Task 1

Draw a top-view beak with bill length 40 mm, base width 16 mm, and a straight taper to a point. Place nostril centers at 25 percent of bill length from the base and 50 percent of the local half-width from the centerline. Record all values.

Answer: Centerline vertical, tip at top. Base half-width 8 mm each side. Straight side lines from base corners to the tip. Nostril position at 0.25 times 40 = 10 mm from base. Local half-width at 10 mm with straight taper is 8 minus (10/40) times 8 = 6 mm. Nostril offset is 0.50 times 6 = 3 mm each side. Mark both nostrils and record values.

Reason: The straight taper gives a linear half-width from 8 mm at the base to 0 mm at the tip. At 10 mm from the base, the half-width is 6 mm. The nostril offset follows from the stated fraction of local half-width.

Check: Measure drawn length (40 mm), base width (16 mm), nostril distance from base (10 mm), and nostril offset from centerline (3 mm each side). Compare left and right offsets.

Task 2

Draw a top-view beak with bill length 60 mm, base width 24 mm, and a midpoint width of 14 mm at half the bill length. Place nostril centers at 30 percent of bill length from the base and 40 percent of the local half-width from the centerline. Record all values.

Answer: Centerline vertical, tip at top. Base half-width 12 mm each side. Midpoint at 30 mm with half-width 7 mm each side. Side lines from base corners through midpoint guides to the tip. Nostril position at 0.30 times 60 = 18 mm from base. Local half-width at 18 mm using linear taper between base and midpoint is 12 minus (18/30) times 5 = 9 mm. Nostril offset is 0.40 times 9 = 3.6 mm each side. Mark both nostrils and record values.

Reason: The taper between base and midpoint is linear: half-width drops from 12 mm to 7 mm over 30 mm. At 18 mm from the base, the half-width is 9 mm. The nostril offset uses the stated fraction of that local half-width.

Check: Measure drawn length (60 mm), base width (24 mm), midpoint width (14 mm), nostril distance from base (18 mm), and nostril offset (3.6 mm each side). Compare left and right offsets.

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Original tasks 3, 4 / complete keys

Task 3

Draw a top-view beak with bill length 45 mm, base width 18 mm, and a midpoint width of 10 mm at half the bill length. Place nostril centers at 20 percent of bill length from the base and 45 percent of the local half-width from the centerline. Record all values.

Answer: Centerline vertical, tip at top. Base half-width 9 mm each side. Midpoint at 22.5 mm with half-width 5 mm each side. Side lines from base corners through midpoint guides to the tip. Nostril position at 0.20 times 45 = 9 mm from base. Local half-width at 9 mm using linear taper between base and midpoint is 9 minus (9/22.5) times 4 = 7.4 mm. Nostril offset is 0.45 times 7.4 = 3.33 mm each side. Mark both nostrils and record values.

Reason: The taper between base and midpoint is linear: half-width drops from 9 mm to 5 mm over 22.5 mm. At 9 mm from the base, the half-width is 7.4 mm. The nostril offset uses the stated fraction of that local half-width.

Check: Measure drawn length (45 mm), base width (18 mm), midpoint width (10 mm), nostril distance from base (9 mm), and nostril offset (3.33 mm each side). Compare left and right offsets.

Task 4

Draw a top-view beak with bill length 55 mm, base width 22 mm, and a midpoint width of 13 mm at half the bill length. Place nostril centers at 35 percent of bill length from the base and 35 percent of the local half-width from the centerline. Record all values.

Answer: Centerline vertical, tip at top. Base half-width 11 mm each side. Midpoint at 27.5 mm with half-width 6.5 mm each side. Side lines from base corners through midpoint guides to the tip. Nostril position at 0.35 times 55 = 19.25 mm from base. Local half-width at 19.25 mm using linear taper between base and midpoint is 11 minus (19.25/27.5) times 4.5 = 7.85 mm. Nostril offset is 0.35 times 7.85 = 2.7475 mm each side, rounded to 2.75 mm. Mark both nostrils and record values.

Reason: The taper between base and midpoint is linear: half-width drops from 11 mm to 6.5 mm over 27.5 mm. At 19.25 mm from the base, the half-width is 7.85 mm. The nostril offset uses the stated fraction of that local half-width.

Check: Measure drawn length (55 mm), base width (22 mm), midpoint width (13 mm), nostril distance from base (19.25 mm), and nostril offset (2.75 mm each side). Compare left and right offsets.

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Source rubric / reflection

- [ ] Top-view convention is stated and followed: centerline vertical, tip direction labeled.
- [ ] Bill length and base width match the recorded values within a stated tolerance.
- [ ] Side lines are smooth and mirror-symmetric within a stated tolerance at base, midpoint, and nostril position.
- [ ] Nostril centers are placed at the recorded fractions of bill length and local half-width, mirrored on both sides.
- [ ] All measurements and fractions are recorded beside the drawing with consistent units.
- [ ] Valid alternative conventions are accepted if stated, measured, and internally consistent.

Reflection: What did you check, what did you change, and what will you try next?